

REMARKS/ARGUMENTS

The inventor acknowledges that the specification wasn't adequately presented in its prior version, and great effort was placed into amending the specification, for better and more completely describe the possible forms and uses of the invention.

There is a first main claim and all the rest are made dependent of this one with the exception of the last two. Said first main claim was restructured to be as descriptive and strictly defined as possible, and several others of the dependent were amended to be more specific as well as more claims were added which mostly relate to pre-existing commonly or not so commonly practical implementations utilized for optimizing systems like this having a microcontroller, using batteries, sensors and leds, etc. This is done in an effort to obtain some real life practical protection, since it is seen in the past, that a well grounded patent is "improved" upon by other party by simply adding functionalities that are known and used for the same purpose in other applications, but are not so widely known. So preemptively and respectfully I have included some of these.

Ie.: it is commonly done to squelch or gate "noise"(lower level signals) on a tracked pulse train. (since the radio era!) By claiming applying this solution, which was going to be done anyways, a more detailed explanation is available for educating future continuing developers of this avenue. The inventor believes, that even though this wasn't specifically mentioned before, and properly trained individuals will consider this an obvious implementation, and is better disclosed for furthering the available details of the invention. The universal use of this type of solutions is obviously not claimed, neither an independent claim based on this, but only its application to the specific device of claim 1. This also is beneficial in order to prevent practical solutions like this one possibly find their way though the system and carve a way unfairly into this development.

Furthermore, descriptions like programming a microcontroller, have been translated into accessing presets, which is a more fitting real life description, and if you have presets, you must consequently be able to select them, store them alter them, etc., so that also generated claims specific to this area, which again, is nothing new, but is a different and more proper form of describing what is actually happening.

There are claims 65 and 66 representing expansive forms of detecting events but still including the combination with the novel components disclosed in the invention.

Regarding patent and application references:

**6,643,968 Glock November 11, 2003
and Application 20030061753**

Both are based on 2 detectors making independent reports via 2 separate pipelines;

1) A first piezo detector reporting from recoil induced deformation of the weapon elastomeric handle.

2) A second carriage position detector attached to the handle reporting position of carriage.

Round discharge is accounted when both detectors report within a "select time" and in a fundamental difference with the disclosed invention, this system seeks for identifying a discharge by two events occurring within a time window and estimating these events took place in close proximity or succession that will be characteristic of a discharge, since a handle deformation induced by firstly by the discharge will be followed by a prompt displacement of the carriage. So, by establishing a select time window the discharged round criteria will be met in this way. This doesn't include actual typical weapon cycling neither utilizing the defining points of a weapon automatic cycle as reference for tracking like the present invention which includes tracking logic linking to the logical way automatic weapons work. It does not have provisions for identifying the discharge of the last round of a magazine load, since a hold open condition is unidentifiable. As a consequence, tracking an specific load discharge is not possible. The present invention can do both.

The primary form of the present invention is based on piezo detecting dynamics and reporting an impulse train in synchronicity and within the duration of a weapon automatic cycle starting with a discharge and concluding with a reload if this second event takes place.

Detecting in this case is based on the induced stresses resulting fundamentally by the abrupt dynamics characteristic of the beginning and the end of a weapon discharge and reload.

All automatic weapons have a natural repetitive cycle that locks in time these events independent

of the user rate of fire. It is actually the weapons automatic rate of fire if discharged in this way. The tracking system is adapted to identify higher impulse sets within said train representing the highest dynamic events within said cycle, which are those occurring at the actual discharge of the projectile, which happens at start of the cycle, and the ones induced by the slamming into an abrupt stop of the reload provisions of the weapon as it chambers a new round, which happens to take place at the end of the automatic discharge and reload cycle closing it. (as shown in the discharge graphics)

The higher impulse patterns that occur in synch with the discharge and the reload and are representative of their occurrence, and the absence of one becomes indicative of it not having taken place within the typical cycle duration of the weapon in use.

The microprocessor provisions track these impulses within the known cycling time of the weapon.

The presence of only one pulse set, will report an uncomplete cycle, hence a discharge with no reload,

clearly identifying the last round of a load.

Evidently, tracking will not be limited to a historical count alone, but tracking a per load count is also possible, since a reload with no discharge is detectable and is also used to execute a reset of the load count since this takes place logically when the last round of a load was discharged and, as mentioned before, the weapon stays in a hold open position generating only one report, the one generated by the discharge, within the expected time frame.

When manually rechambering a new round, provisions are also in place to repeat a reset to default since this will be single impulse set also. Error tracking provisions are easily implemented by using logic provisions for identifying and tracking anachronic events.

Additionally, the system is flexible enough as to also identify and track rounds being discharged in a weapon running on full automatic since the periodicity in which the discharge events occur is recognizable by the microprocessor provisions in view of the fact that they are a discharged combined with a reload taking place at the same time and this reports is a succession of pulses spaced in a timing equivalent to the weapon rate of fire, which is already known to the system.


In view that a piezo detecting means in this invention tracks structural shock/vibration in combination with abrupt acceleration or deceleration, and the fact that these dynamics are widespread in a weapon structure in one measure/mix or another, by using an adequate sensing technology, and adequately adapting it, event reports could be drawn in a variety of locations while attached to any of several components and doesn't have to be built into a handle even though in certain circumstances it could, and protection for possible embodiments is also respectfully requested to be allowed.

This invention is much more useful and much easier to adapt due to its compactness and adaptability to several locations on a weapon. Glock's version, require it to be built in only by the manufacturer, hence preventing retrofitting into prior existing product.

In the case of the inclination sensor, it is used to generate a pulse indicating that a transient abrupt momentary inclination took place, and not an steady on state as Dworzan describes as mentioned in the prior office action. Currently, mems sensors are becomming increasingly affordable and compact and present an option to be considered.

The inventor respectfully requests that the unique and novel features disclosed herein to be considered as having sufficient utility merit for also allowing the detecting portion a more universal and flexible definition and being non interfering with prior art in view of them disclosing a new combination with increased useability not contemplated before.(Claims 65 and 66).

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.



By _____ Eduardo C. Vasquez Tel: (305)444-7286